who investigated the cause of capsizing of the *Daphne* in the Clyde in 1883. Sir Edward was one of the Lords of the Treasury in Mr. Gladstone's Government of 1886.

Sir Edward Reed was elected F.R.S. in 1876. He sat upon the council of the Institution of Naval Architects from 1863, when he retired from the secretaryship, until his death, and upon the council of the Institution of Civil Engineers from 1883 to 1896. He was the recipient of very high Russian, Austrian, Japanese, and Turkish honours and decorations. Among the works published by him are:—"Shipbuilding in Iron and Steel," 1869; "Our Ironclad Ships," 1870; "Letters from Russia in 1873"; "Japan," 1880; "The Stability of Ships," 1884; "Modern Ships of War" (in collaboration with Admiral Simpson), 1885; "Fort Minster, M.P.," a novel, 1885; "Corona and other Poems," 1857; and "Poems," 1902. He was also the author of numerous papers in the Transactions of the Institution of Naval Architects and other professional institutions, and of two important papers, "On the Relation of Form and Dimensions to Weight and Material in the Construction of Ironclad Ships," which were communicated to the Royal Society by the late Sir George Stokes, and are published in the Philosophical Transactions of 1868 and 1871. He was also the proprietor and editor of the quarterly magazine *Naval Science* from 1872 to 1875, and contributed many articles to its pages.

The subject of this imperfect memoir was not merely a great naval architect, but a man richly endowed by nature with many and varied gifts. He was cheerful and sanguine in disposition, with an attractive and impressive personality, and unusual force and independence of character. He was lucid, graceful, and fluent of speech, and one of the ablest and most effective speakers and controversialists of his time. He long commanded public attention as man of science, politician, orator, and author, and in the last-named capacity he had the unique distinction of earning laurels in fields so far removed from those of his severe professional labours as poetry and romance. No one was more popular or more genuinely admired among his professional brethren and children for his great abilities and accomplishments, and his genial and sociable nature, than the late Sir Edward Reed. FRANCIS ELGAR.

NOTES.

A REUTER message from Stockholm states that the formal distribution of the Nobel prizes took place on Monday evening. Prof. Moissan, Prof. Thomson, Prof. Golgi, and Prof. Ramon y Cajal each received the prize diploma and a gold medal from the King of Sweden in person. Each prize this year amounts to 7659*l*. Prof. Thomson's prize is awarded to him for his researches extending over many years into the nature of electricity, and Prof. Moissan's for his experiments in the isolation of fluorine, his researches regarding the nature of that element, and for the application of the electric furnace to the service of science. Profs. Ramon y Cajal and Golgi are bracketed for the medicine prize on account of their works dealing with the anatomy of the nervous system.

THE Government geologist of South Australia reports that the discovery of corundum in the Farina district is likely to be one of considerable value. The corundum occurs in metamorphic schist, the proportion in the rock amounting in places to 10 per cent. to 25 per cent.

THE American mail brings the announcement of the death, on November 23, of Dr. William H. Chandler, emeritus professor of chemistry at Lehigh University, at the age of sixty-five years. Dr. Chandler taught for many years in the Columbia School of Mines, and was the author of several important works.

IN an article in the *Pall Mall Gazette* (December 10) with the somewhat sensational title of "The Approaching Conquest of Cancer," Dr. Saleeby states that several cases of cancer have been cured or much improved by injections of trypsin, one of the pancreatic ferments, a method of treatment suggested by Dr. Beard, of Edinburgh. Even if this be correct, however, it by no means follows that cancer is to be conquered in the near future, and the premature publication of such details as these in the public Press serves no useful purpose.

MR. W. R. BUTTENSHAW, who has been scientific assistant on the staff of the Imperial Department of Agriculture for the West Indies during the last four years, has been offered the post of botanist in the Agricultural Department of India. He will vacate his present post as soon as his successor has been appointed.

THE annual conversazione and exhibition of new apparatus arranged by the British Electrotherapeutic Society will be held in the small Queen's Hall on Friday, December 14, from 7.30 p.m. to 10.30 p.m. The exhibition will be open from mid-day.

WE learn from the *Chemist and Druggist* that a wealthy landed proprietor named M. Audrac, who died recently at Le Luc, near Draguignan, has left the Pasteur Institute the whole of his fortune, valued at the equivalent of 50,000*l*. at least. Interviewed on the subject, Dr. Roux, the distinguished director of the institute, stated that he had received a visit from a lawyer, who informed him that a will had been found bequeathing the whole of the property to the institute. The reserve, however, was made that another document might possibly come to light making various bequests or otherwise disposing of part or whole of the property; consequently, Dr. Roux says that some time must elapse before the Pasteur Institute can know definitely how it stands with regard to the inheritance.

BY the death of Mr. John Ward, of Longton, Staffs, British geology has lost one of those quiet, earnest workers who, in the midst of their other duties, achieve so much for science. Mr. Ward was an original member of the North Staffordshire Field Club, and one of the most regular and valued contributors to its Transactions. In 1874 he was elected a Fellow of the Geological Society of London, and in 1898 he was the recipient of an award for his work upon the fossil fauna and flora of the North Staffordshire Coalfield. As a collector, Mr. Ward was the happy possessor of a splendid enthusiasm tempered with sound knowledge; a large part of his collection of Coal-measure fishes is now in the British Museum (Natural History). While attending to the conduct of his business and devoting his spare time to geology, Mr. Ward yet found it possible to take a prominent part in the duties of citizenship. He will be missed greatly by students of Carboniferous faunas, not in this country alone, but by his numerous friends abroad.

THE following telegram, dated Bombay, November 29, has appeared in the public Press:—"Dr. von Lecoq, a scientific emissary of the Prussian Government, has arrived safely at Srinagar after a journey through the most remote parts of Central Asia. He has brought with him a quantity of highly interesting paintings on stucco, the backgrounds in many cases being of gold leaf as in Italian work, and a number of manuscripts in ten different languages and one wholly unknown tongue. Dr. Lecoq's discoveries probably constitute the greatest archæological find since the days of Layard and Rawlinson." Dr. von Lecoq will probably not be over-pleased with the last sentence of this telegram, for the wording of which he of course is not responsible. He had been sent to explore sites in Chinese Turkestan like those discovered by Dr. Stein some years ago; Dr. Stein published his discoveries in his well-known book "Sand-buried Cities of Khotan" (reviewed in Nature of July 21, 1904, vol. lxx., p. 275). Dr. von Lecoq has evidently trodden successfully in Dr. Stein's footsteps, and has, judging by the description in this telegram, found antiquities of the same type as those brought back by the earlier explorer, and now exhibited in the British Museum. To compare with the epoch-making discoveries of Rawlinson and Layard the work even of the pioneer of the archæology of Turkestan, Dr. Stein, would show great want of a sense of proportion. Such comparisons are always odious, and often, as in this particular instance, simply silly.

The eighteenth annual dinner of the Institution of Electrical Engineers was held on December 4. The president, Dr. R. T. Glazebrook, F.R.S., presided over a distinguished company. Mr. H. Babington Smith, who proposed the toast of "The Institution of Electrical Engineers," pointed out the good which has been done by the visit of foreign friends in the summer, one of the results of which was the establishment of the International Commission for the Standardisation of Electrical Nomenclature and the Rating of Electrical Machinery under the auspices of the Institution of Electrical Engineers. The recent growth of wireless telegraphy was then compared with that of what might be called ordinary telegraphy. In 1825 a telegraph line was laid for a distance of about eight miles, and this might be regarded as the starting point of ordinary telegraphy. Little advance was made during the next ten years, and it was more than forty years before telegraphy across the Atlantic became practicable. Wireless telegraphy, on the other hand, was put into practical application in less than ten years from its beginnings, and the crossing of the Atlantic will probably be satisfactorily accomplished in less than forty years. The president, in replying, referred to the tablet recently unveiled by Lord Kelvin in memory of Michael Faraday in the building (formerly a chapel in which Faraday worshipped) of the National Telephone Company at Barnsbury, London, N. It is seventy-five years since Faraday first published a description of his original magneto-electric machine. Progress has indeed been great since then, especially during the last few years. The basis upon which the subject rests has been firmly established by Faraday's disciples, Kelvin, Maxwell, and others, and the progress has been great because the efforts of scientific and practical men have been combined in due proportions. Lord Justice Buckley proposed "Science and Industries." Sir Arthur Rücker, in responding, said that science and industry are mutually supplementary. The general view, no doubt, is that industry follows rather from science, and the corresponding view is that science follows from industry. There is an element of truth in both views. Very frequently, indeed, great scientific discoveries follow from the efforts of those who are interested in industry. The two things are best closely combined.

In No. 1496 of the Proceedings of the U.S. National Museum (vol. xxxi., pp. 569–591) Mr. M. Ward Lyon points out that the great anteater inhabiting Central America, for which he proposes the name *Myrmecophaga centralis*, is readily distinguishable from the typical *M. tridactyla* (or *jubata*) of Brazil by skull-characters. As shown in the plate accompanying his paper, the most distinctive difference between the skulls of the two forms is to be found in the degree to which the frontals interpenetrate the nasals, the dissimilarity in this respect being very great. It was only to be expected that detailed examination would reveal local differences in a type ranging from Guatemala to Brazil.

No. 1495 (vol. xxxi., pp. 539–568) of the Proceedings of the U.S. National Museum is devoted to a detailed description, by Mr. A. Hrdlička, of a collection of twenty-six skulls of the orang-utan obtained by Dr. Abbott in western Borneo, twenty-four of these coming from the Sakaiam River district in Landak. Some difficulty was experienced in determining which specimens belonged to fully adult animals, the dentition affording no trustworthy evidence. The best test, in the case of males, appears to be the fusion of the temporal ridges to form a sagittal crest. After recording measurements of a number of the specimens, the author refers to various dental abnormalities, such as the presence of supernumerary cheek-teeth and the diminution in the size of the hinder molars in some female specimens.

Two papers in the *American Anthropologist* (vol. viii., No. 2, April–June), the one by Dr. J. C. Merriam and the other by Prof. F. W. Putnam (to whom we are indebted for separate copies of both), deal with recent cave-exploration in California, and the evidence thereby afforded in favour of the existence of Pleistocene man in that State. The mammalian fauna of Mercer's, Potter Creek, and Samwel Caves (which appear to be the most important of the group) has been described in various papers by Messrs. E. L. Furlong and W. J. Sinclair, who have recorded remains of the ground-sloth Megalonyx and of two remarkable new genera of ruminants, Preptoceras and Euceratherium, which seem to show evidence of affinity both with the musk-ox and with the Himalayan and Tibetan takin (Budorcas). In some of these caves it appears to have been the custom of the natives to throw in the bodies of their deceased relatives, and the bones remaining from these appear to be younger than those of the ground-sloth fauna. The most important evidence of the coexistence of man with the latter is afforded by certain polished and pointed bones, a small percentage of which are perforated. Many of these bones recall those found in the shell-mounds, although they are less rough, and some may be portions of Euceratherium skeletons. Stone-payments showing unmistakable evidence of man's handiwork occur in the caves, and in Prof. Putnam's opinion these are probably of Pleistocene age. According to the same authority, two perforated bones figured in his paper "are sufficiently important to warrant the belief that man inhabited the vicinity of the caves at least as early as the latter part of the Quaternary period."

Prof. Kellogg, of the Stanford University, gives in *Science* of November 23 a short account of a preliminary investigation conducted by Miss L. Ramsay under his direction as to assortative mating, in nature, between individuals of different varieties of the lady-bird *Hippodamia convergens*. The investigation was interrupted by the great earthquake, but from sixty cases noted it is concluded that the matings are "wholly non-selective; they are chance matings." This conclusion is not, however, quite in accordance with the numbers given in the text, which, so far as they go, indicate a certain degree of homogamy, and it is to be hoped that the investigation will be taken up again next year with the view of obtaining sufficient observations to warrant a more confident conclusion.

A PRELIMINARY notice of the Ramie Growing Association, formed with the object of fostering the industry in this fibre, has been received from the honorary secretary, Mr. D. Edwards-Radclyffe.

THE list of seeds of hardy herbaceous plants and of trees and shrubs available from Kew for exchange with botanic gardens has been published as the first appendix to the *Kew Bulletin* for 1907.

IN view of the fact that there is an import trade of sugar into India exceeding a quarter of a million of tons per annum, it is difficult to realise that nearly one-fifth of the world's output of sugar is produced in the Indian Empire chiefly from the sugar-cane and also from certain palms. In the course of an article on the subject in *Tropical Life* (November), the annual production in India is roughly computed at three million tons, and if more efficient methods of extraction were adopted this amount could be largely increased. Among various references to rubber in the journal, a note on block rubber indicates the advantages attending this method of preparation over the previously belauded biscuit, and an article on Ceara rubber refers to the hopeful expectations of establishing the tree in various parts of southern India. A short account of Mr. W. Fawcett's efficient work in Jamaica accompanies his photograph that is presented in this number.

A FLORA of the State of Washington, prepared by Mr. C. V. Piper, forms vol. xi. of the Contributions from the United States National Herbarium. Partly owing to the seaboard position of the State, the flora presents numerous ecological features of interest that are described at some length and lavishly illustrated. Six important zones are distinguished, the upper Sonoran area coextensive with the sagebrush, *Artemisia tridentata*, the humid transition where the red fir, *Pseudotsuga mucronata*, is dominant, the arid transition area characterised by prairies of *Agropyron spicatum* or forests of *Pinus ponderosa*, a Canadian zone where *Pinus monticola* grows, a Hudsonian or zone of *Abies lasiocarpa*, and an Alpine region. The systematic enumeration shows a preponderance of Compositæ, in which order Senecio is an important genus; among other large orders, Castilleja, belonging to the Scrophulariaceæ, Lupinus and Phaca, to the Leguminosæ, are characterised by a considerable proportion of endemic species.

THE current issue of the Records of the Geological Survey of India (vol. xxxiv., part ii.) contains the statistics of the mineral production of India during 1905, by Mr. T. D. La Touche. The total value is given as 5,707,956*l*., which is 350,116*l*. in excess of that for 1904. Nearly every item shows an increase. Gold, with a value of 2,416,966*l*., takes the first place, and coal, with a value of 1,436,951*l*., the second. The output of coal, 8,417,739 tons, has again exceeded all previous records. Other minerals for which returns of production are given are, in order of importance, petroleum, salt, saltpetre, manganese ore, mica, rubies, jadestone, graphite, iron ore, tin ore, chromite, diamonds, magnesite, and amber. Incomplete returns are given for alum, arsenic ore, bauxite, borax, building stone, clay, copper ore, cornelian, corundum, garnet, gypsum, limestone, marble, slate, steatite, and tourmaline. In the same issue Mr. E. Vredenburg gives a detailed account of *Nummulites Douvillei*, an undescribed species from Kachh, named in honour of the geologist whose researches on the Foraminifera have thrown so much light on the classification of the Tertiary system. The paper concludes with a summary of the zonal distribution of Indian Nummulites. Mr. J. Malcolm Maclaren gives a detailed description of some auriferous tracts in southern India, in territory under British administration or within the Nizam's dominions. The paper is accompanied by a coloured geological map of the Gadag auriferous belt, Dharwar district. In this goldfield the extensive old workings are of great interest. Numerous small vertical shafts, 4 feet square, were sunk by the ancient workers to the dip of the veins, often not cutting the vein until the shafts were 80 feet in depth. The veins were then followed on the underlie with great assiduity to a depth of at least 300 feet. Abundant relics of mills for crushing quartz exist. Those of most frequent occurrence were essentially rock-breakers, in which the quartz was broken to the size of a walnut. They are depressions 6 inches wide and 4 inches deep in hard rock. Into these mortars there fitted rude stone pestles 9 inches long, and sufficiently thick to be grasped in the hand. The Gadag goldfield is exceptionally well situated for economic working, and is of special geological interest in the occurrence of its gold-quartz veins in argillites. In the last paper Mr. R. R. Simpson records the abandonment of the collieries worked by the Government of India at Warora, Central Provinces, in consequence of a serious subsidence that took place on March 28.

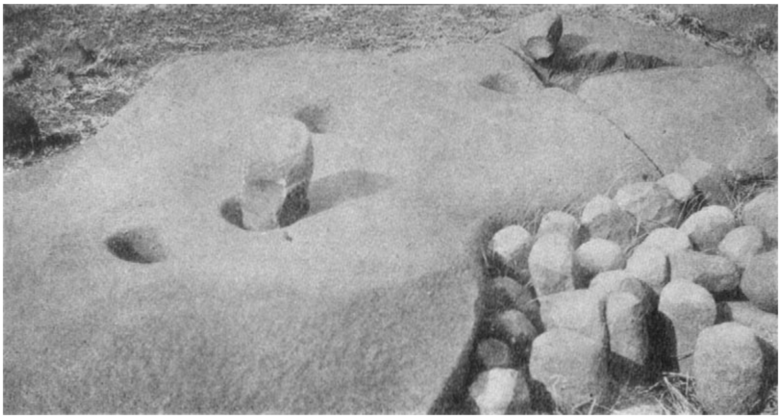

Photo. J. M. Maclaren.

Ancient Rock Mortars, with Pestles, near Sangli Mines, Gadag.

FATHER GUTIÉRREZ-LANZA, S.J., assistant director of the Belén Observatory, Havana, writes taking exception to the statement in these Notes, in NATURE of October 25 (vol. lxxiv., p. 642), that the great hurricane of October 17 had burst over Cuba "apparently with little or no warning." The note was based on the cabled reports, which stated that Father Laurent Gangoiti had telephoned to Columbia Camp an hour before the storm burst, announcing its approach. From the information now supplied by Father Gutiérrez-Lanza, it is clear that both in the local newspapers and in messages to the U.S. Weather Bureau at Washington, Father Gangoiti had on October 12 announced the existence of a cyclonic disturbance south of Barbados; on October 16 that it was about 500 miles south of Havana; at 6 a.m., October 17, that it was approaching western Cuba and moving towards Florida; and at 3 p.m. of the same day that the cyclone was nearing Havana province. The storm reached the city of Havana at 10 p.m. The word "apparently" in the note was intended to cover any possible imperfections in the hurried early reports of the calamity. With the information bearing upon the predictions of the approach of the recent hurricane towards Havana, Father Gutiérrez-Lanza has forwarded an interesting brochure on "The Pioneer Forecasters of Hurricanes," by the Rev. Walter M. Drum, S.J., of Georgetown University.

IN *Engineering* (vol. lxxxii., No. 2135, December 1) Mr. H. Burcharts gives illustrations of the sand-blast apparatus used for testing building materials at Gross-Lichterfelde Institute. Some results of tests are given showing that the new method gives useful information with regard to the power of resistance to wear in practical use, and to the quality of road and floor materials. The duration of the exposure to the sand-blast has, after many experiments, been fixed at two minutes, the steam-gauge indicating a pressure of two atmospheres. This short time suffices to give a good indication of the structure of the materials tested and their resisting qualities. The sand used is a natural quartz sand of fine and nearly round grains, procured by washing and drying the original sand and passing it through a sieve with 120 meshes per square centimetre, or about 774 meshes per square inch. It is the waste from the German standard sand used for testing Portland cement, the grains of which pass the sieve of sixty meshes, and are retained on the sieve with 120 meshes per square inch. Granite from Malmö lost 0·09 cub. cm. per square cm., blast-furnace slag, Bochum, 0·12, red pine 0·10, and linoleum 0·02.

SIGNOR GUIDO BORDONI-UFFREDUZI gives a summary of sanitary progress in Milan, accompanied by diagrams of statistics of death-rates, particularly from infectious diseases, during the past thirty years. The paper is published in the Lombardy *Rendiconti*, xxxix., 14.

PROF. TEMISTOCLE CALZECCHI-ONESTI, writing in the *Rendiconti* of the Lombardy Institution, xxxix., 14, regarding the discovery of the coherer, directs attention to his experiments made in 1884, before Branly had worked on the subject. He further points out the important part played by Righi in the discovery of wireless telegraphy.

IN the *American Journal of Mathematics*, xxviii., 3, Mr. F. J. B. Cordeira discusses the analogy between gyroscopes and cyclones. The author considers that the oscillations of a gyroscope have a close analogy in the motions of cyclones about a position of equilibrium. It is also suggested that the frictional couple due to cyclones tends to accelerate the earth's rotation, and that the effect is cumulative, though it should be noticed that the only possible result is the transference of angular momentum between the atmosphere and earth, and that the total angular momentum of both cannot be altered.

IN the Proceedings of the Royal Philosophical Society of Glasgow, under the title "Solution of Physical Problems," Prof. Andrew Gray, F.R.S., discusses two problems in the theory of attractions. The first is the determination of the attractive force between the two halves of a sphere of gravitating matter, the surfaces of equal density being concentric spheres. The problem for the case of uniform density was solved by Prof. Tait in a very simple way by considering the hydrostatic pressure on the supposition that the sphere was fluid. In the present paper three methods are considered, namely, the hydrostatic method, a method based on Gauss's well-known theorem of the flux of force over a closed surface, and a third based on a simple theorem according to which the attraction between two concentric hemispherical shells is the same as if the mass of the inner shell were concentrated at the centre. The second part of the paper consists in a re-discussion of the problem of the attractions of ellipsoids, with some historical notes and alternative methods of treatment.

THE number of the Journal of the Chemical Society published on November 29 contains abstracts of several mineralogical papers. One of these (F. Zambonini) describes crystals of galena deposited by sublimation on the scoria at the edge of the crater formed as a result of the eruption of Vesuvius in April. This galena appears to owe its origin to the action of hydrogen chloride on the vapours of lead chloride. An abstract (E. Hussak) describes the bean-shaped pebbles, considered to be a good indication of the presence of diamonds, in the alluvial gravels at Diamantina, Brazil. They include two new mineral species, and consist of barium aluminium phosphate, named gorceixite; strontium aluminium sulphato-phosphate, named harttite; and lead aluminium phosphate, probably identical with plumbogummite. An abstract of a paper by Mr. A. Pauly describes a new mineral of the zeolite group from Hainburg, Lower Austria, and another (G. d'Achiardi) deals with a similar mineral from Elba.

MESSRS. W. HEFFER AND SONS, Cambridge, have purchased the mathematical library of the late Prof. Joly, of Dublin, and the botanical library of the late Prof. Marshall Ward, of Cambridge. Catalogues of the libraries are in preparation.

WE have received a copy of an important contribution to the *American Anthropologist* (vol. viii., No. 3, July–September), which has been published separately. The paper, which was presented by the American Anthropological Association to the International Congress of Americanists held at Quebec this year, deals with recent progress in American anthropology, and is a review of the activities of institutions and individuals from 1902 to 1906.

EVERY attempt to increase the number of people with an intelligent interest in science deserves encouragement. Our contemporary *Knowledge and Illustrated Scientific News* continues its efforts in this direction, and presents its readers month by month with accurate and interesting accounts of modern scientific work prepared by writers in close touch with knowledge in the making. In addition to illustrated articles, each issue of the magazine includes sections in which the progress made in the various branches of science is noted in correct though popular and easily understood language.

THE issue of "Who's Who" for 1907 is even more complete than the edition of a year ago. Its size has been increased by nearly a hundred pages, and there are now 1958 pages of short autobiographies of persons of importance in the world of work and the world of society. Prominence is given to men of science who have added to knowledge, and many foreign investigators are recognised equally with those of our own country. There is, however, a striking disparity in the amount of detail provided in the various life-histories; while in the case of some American scientific workers details are provided of each step in their careers and of their individual papers, many Fellows of the Royal Society supply the reader with next to nothing about themselves; but as a whole "Who's Who" is an indispensable work of reference, and the editor is to be congratulated upon its completeness. The tables which were formerly included with the biographies, and were, in fact, the nucleus of the book, are published separately in an extended form under the title "Who's Who Year-book, 1907."

OUR ASTRONOMICAL COLUMN.

COMET 1906*g* (THIELE).—A new set of elements and an ephemeris for this comet, computed by Dr. E. Strömgren, appear in No. 4138 of the *Astronomische Nachrichten*. The following is an extract from the ephemeris:—

Ephemeris 12h. M.T. Berlin.

1906	α (true)	δ (true)	1906	α (true)	δ (true)
	h. m.	° ′		h. m.	° ′
Dec. 14 ...	12 59 ...	+53 6·4	Dec. 26 ...	14 35 ...	+58 24·6
18 ...	13 32 ...	+55 29·2	30 ...	15 2 ...	+59 13·3
22 ...	14 5 ...	+57 12·7			

On the last-named date the brightness of the comet will be about half that at the time of discovery (mag. = 8·5).

The results of a number of observations of this object appear in No. 4137 of the same journal.

COMET 1906*h* (METCALF).—Numerous observations of this comet are recorded in No. 4138 of the *Astronomische Nachrichten*, and an ephemeris and set of elements, calculated by Herr M. Ebell, are also given.

Observing this object with the large equatorial of the Bordeaux Observatory on November 22, M. E. Esclangon perceived two nebulosities near to his comparison star B.D. −3°·696. These objects were easily visible, and differed in shape, the first being elongated, with a length of about 30″, and the second being circular, with a diameter of about 20″. Taking α and δ as the equatorial coordinates of the star B.D. −3°·696, the coordinates of the respective centres of the nebulosities at 11h. 30m. (M.T. Bordeaux) on November 22 were

$$\alpha - 6{\cdot}4\text{s.},\ \delta + 6'', \text{ and } \alpha - 5{\cdot}3\text{s.},\ \delta - 2'\ 20'',$$

but the various settings on the second object appeared to show an hourly movement of $\alpha = +0{\cdot}7$s., $\delta = -7''$. On November 23 M. Esclangon was unable to re-discover these nebulosities.

On receiving the news of this observation it occurred to Prof. Kreutz that the nebulosities might be companions to comet 1906*h*, and he therefore asked for observations of B.D. −3°·696 from several other observatories. Prof. Millosevich replied that he could find no appendices to this star, which was, however, unfavourably placed for observation, whilst at the time of publication no other observers had been able to make the desired observations.

A METEORITE IN THE ATLANTIC (OCTOBER 17).—The owners of the Prince line of steamers have received a letter, published in the *Liverpool Journal of Commerce* (November 27), from Mr. C. B. Anderson, captain of the *African Prince*, describing the fall of a meteorite observed by him on October 17. Captain Anderson says, in the course of his letter:—"On the evening of October 17 I was on the bridge with the second officer, when suddenly the dark night was as light as day, and an immense meteor shot comparatively slowly at first, because the direction was so very perpendicular to our position, then more rapidly towards the earth. Its train of light was an immense broad electric-coloured band, gradually turning to orange, and then to the colour of molten metal. When the meteor came into the denser atmosphere close to the earth, it appeared, as nearly as it is possible to describe it, like a molten mass of metal being poured out. It entered the water with a hissing noise close to the ship."

SOME REMARKABLE SMALL NEBULÆ.—In No. 4136 of the *Astronomische Nachrichten* Prof. Barnard describes, and gives diagrams of, several remarkable groups of small nebulæ which he has discovered since 1888.

In the first group there are six nebulæ, two of which were probably originally discovered by Stephan, in a circular field of 16′ diameter. The second group also contains six, two of which are remarkably small and are elongated, and several other nebulæ were suspected in the same field. From the frequency with which these groups occur associated in isolated, compact clusters, Prof. Barnard thinks there can be no doubt but that the members of each group are physically connected. Both the above groups, and two others, found in 1889 and 1890 respectively, were discovered with the 12-inch refractor of the Lick Observatory.

Another nebula, which from its remarkable shape Prof. Barnard has named the "Bug Nebula," was discovered by him, with a 5-inch refractor, in 1880. This object, as seen in the 36-inch refractor, is a triple nebula having streamers running in a north-preceding direction from the two preceding components, and two nebulous arches springing from the following component, thus giving the whole the appearance of a ghostly beetle of some kind. In the N.G.C. it is designated by the number 6302.

THE PERIOD OF β CEPHEI.—Finding that the observations of the interesting spectroscopic binary β Cephei, made during 1901 and 1902, were insufficient to fix the period with certainty, although they showed that in all probability it was exceptionally short, Prof. Frost made arrangements to obtain several spectrograms on each observing night during the past summer, and now publishes a preliminary account of the results in No. 4, vol. xxiv., of the *Astrophysical Journal.*

As many as twenty two-prism plates, with an average exposure of twenty minutes, were secured in one night, and the preliminary discussion of the total shows that the period of the star's radial velocity is probably very near to 4h. 34m. 11s. The provisional measures also indicate a range of velocity of about 34 km., from about +12 km. to −22 km.

Some speculations as to the radius of the orbital motion of the bright component and the inclination of the orbit to the line of sight suggest that the bright body must be near to the centre of gravity of the system, and they also raise the question as to whether the two components must not be nearly in contact. Indications of the second-component spectrum suggest that the difference between the magnitudes of the two bodies may be small.

If these preliminary measures are confirmed, the period of β Cephei is by far the shortest yet discovered for a spectroscopic binary star.

NEW VARIABLE STARS.—By the method of superimposing a negative upon a positive of the same region taken on a different date, Miss Leavitt has discovered twenty-eight new variable stars in the region of the Southern Cross and the "Coal-sack." Two others were discovered on a plate having the Orion nebula at its centre, and one on a plate having the Pleiades central. Prof. Pickering remarks on the paucity of variable stars in the vicinity of the Pleiades, and states that the conditions in that region seem to favour unusual constancy in light. The position and the range of variability of each of these thirty-one variables are given in Circular No. 120 of the Harvard College Observatory.

OBSERVATIONS OF PHŒBE IN 1906.—From Circular No. 119 of the Harvard College Observatory we learn that nine additional photographs of Saturn showing images of Phœbe were obtained with the 24-inch Bruce telescope at Arequipa during August and September last. These photographs have been measured, and the resultant positions of the satellite in respect to Saturn are given in the Circular.